S/M NO : DMBG078001

# Service Manual

## Split System

## Air Conditioner

**Model: DMB-G078LH-V**

**DMB-G098LH-V**

**DMB-G128LH-V**

**DMB-G2713LH-VO**

✔ **Caution**

: In this Manual, some parts can be changed for improving, their performance without notice in the parts list. So, if you need the latest parts information, please refer to PPL(Parts Price List) in Service Information Center.

DAEWOO ELECTRONICS

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1.Features

1.1 Powerful at cooling/heating, 1.3 times and 1.6 times relatively higher than normal same type of models.

1.2 Low voltage start-up function, even at 160 V it can normally start.

1.3 Anti-icing function at cooling mode.

1.4 Anti-cold air function at heating mode.

1.5 Auto-defrosting and heating recovering function at heating mode.

1.6 Outdoor whole electric current protection

1.7 Temperature protection of the outdoor compressor top.

1.8 Restart protection for the compressor.

1.9 24 hours on/off mode time setting.

1.10 Error self diagnosis function.

1.11 Protection against over-load or too-low current inputted through alternating current.

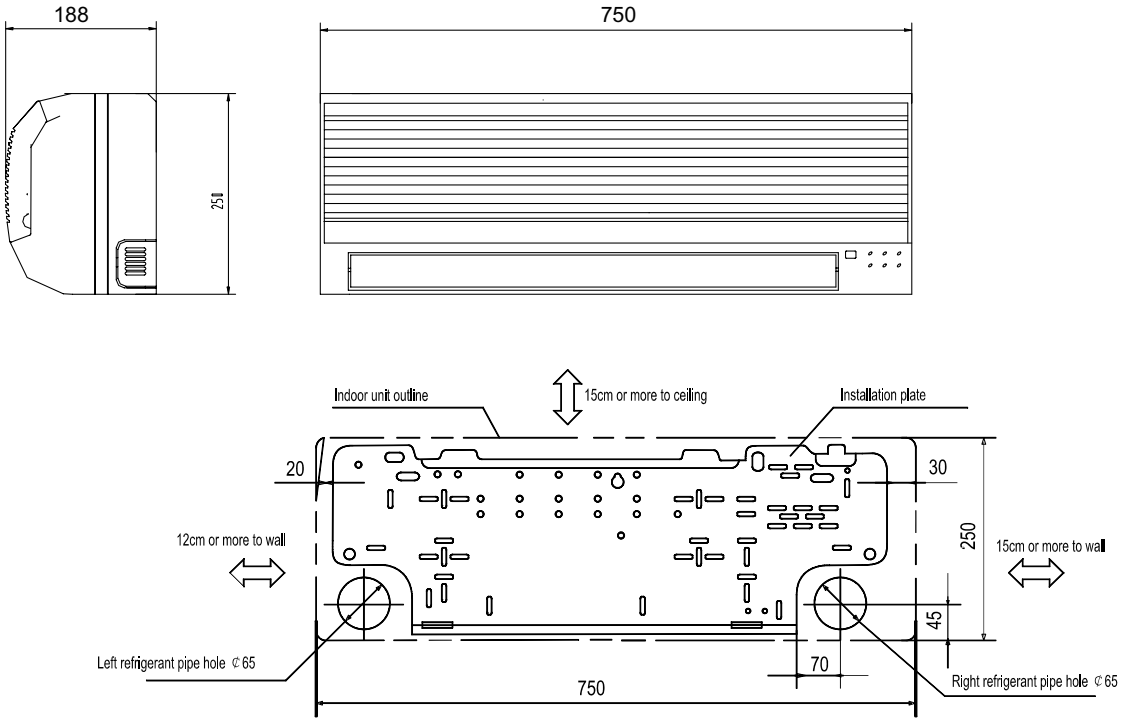
## 2. Specification

| Model Item | | DMB-G078LH-V | DMB-G098LH-V | DMB-G128LH-V |
|---|---|---|---|---|
| Power source | | 220-240V~ 50Hz | 220-240V~ 50Hz | 220-240V~ 50Hz |
| Cooling | Capacity BTU/H | 7000(2700~9000) | 9000(2730~10600) | 12000(3070~12300) |
| | Input W | 820(250~1200) | 1080(270~1470) | 1400(310~1710) |
| | Running current A | 4.8(1.35~6.2) | 6.0(1.45~7.6) | 7.5(1.6~8.8) |
| | EER BTU/W.H | 8.3 | 8.3 | 8.6 |
| Heating | Capacity BTU/H | 9000(2700~11000) | 12000(2730~14000) | 14000(3070~17000) |
| | Input W | 1010(250~1300) | 1400(270~1800) | 1790(300~2380) |
| | Running current A | 5.6(1.35~6.7) 7.2(1.49~9.3) | | 10.5(1.6~12.3) |
| Max. input consumption W | | 2100 | 2300 | 2600 |
| Compressor | Model | BG130X1C-20FZ | BG130X1C-20FZ | BG130X1C-20FZ |
| | Type | Rotary Inverter | Rotary Inverter | Rotary Inverter |
| | Brand | MIDEA TOSHIBA | MIDEA TOSHIBA | MIDEA TOSHIBA |
| | Refrigerant oil ml | 370 | 370 | 370 |
| | Refrigerant oil type | R407C | R407C | R407C |
| Refrigerant R407C g | | 800 | 800 | 1150 |
| Design pressure MPa | | 2.6 | 2.6 | 2.6 |
| Indoor fan motor | Input W | RPG13H 36 | RPG13H 36 | RPG13C 50 |
| | Capacitor uF | 1.2uF/ 450VAC | 1.2uF/ 450VAC | 1.5uF/ 450VAC |
| | Speed level | 3 | 3 | 3 |
| | Hi speed( rpm) | 1100 | 1100 | 1060 |
| | Mid speed( rpm) | 1000 | 1000 | 900 |
| | Low speed( rpm) | 800 | 800 | 800 |
| Air flow (indoor) | High fan m3/h | 500 | 520 | 560 |
| | Middle fan m3/h | 430 | 430 | 460 |
| | Low fan m3/h | 330 | 330 | 380 |
| Noise level (indoor) | dB(A) 35/32/26 | 35/32/26 | 36/32/26 | 36/32/26 |
| Outdoor fan motor | Input W | YDK23-6G 63 | YDK23-6G 63 | YDK23-6G 63 |
| | Capacitor uF | 2.5uF/ 450VAC | 2.5uF/ 450VAC | 2.5uF/ 450VAC |
| Noise (outdoor) | High dB(A) | 51 | 51 | 53 |
| Indoor unit | dimension(W*H*D) | 750*250*188 | 750*250*188 | 815*280*195 |
| | Packing (W*H*D) | 830*336*280 | 830*336*280 | 915*360*275 |
| | Net weight kg | 8.5 | 8.5 | 11 |
| Outdoor unit | dimension(W*H*D) | 780*520*240 | 780*520*240 | 780*520*240 |
| | Packing (W*H*D) | 910*575*335 | 910*575*335 | 910*575*335 |
| | Net weight kg | 37 | 37 | 40 |

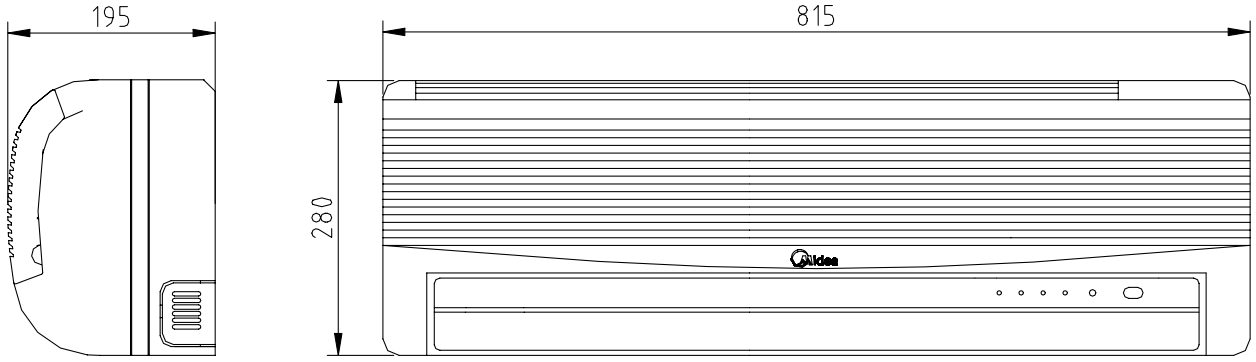
1 The noise date is base on anechoic chamber, during actual operation, these values are normally somewhat different as a result of ambient condition.

3. Dimensions

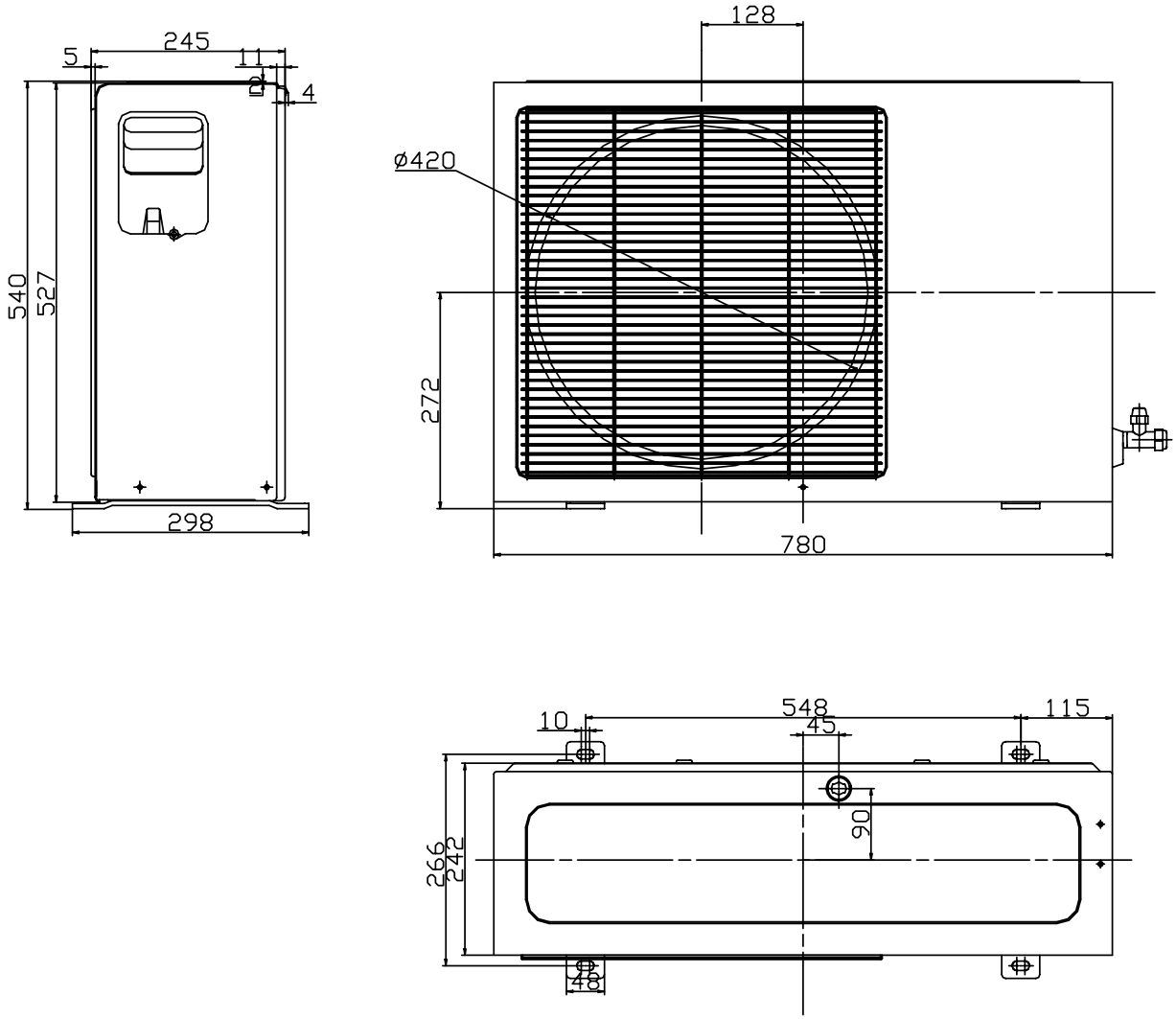
3.1 Indoor Unit(DMB-G078LH-V, DMB-G098LH-V)



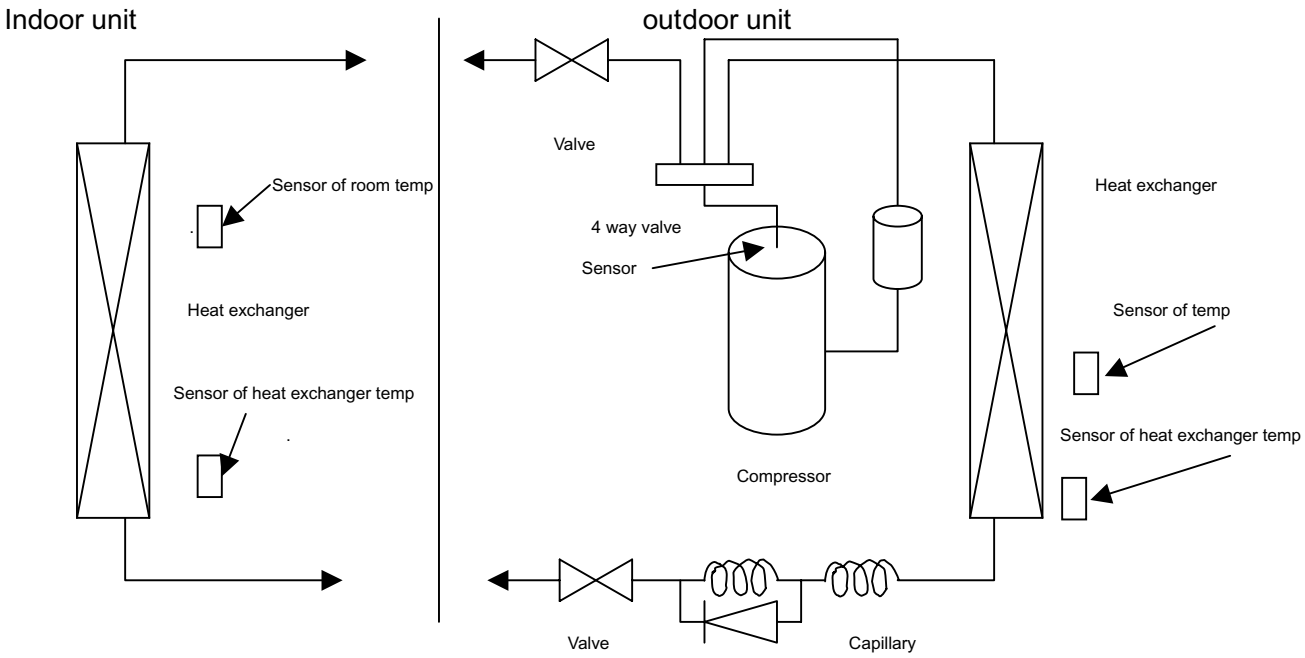
3.2 Indoor Unit (DMB-G128LH-V)




3.4 Outdoor Unit (DMB-F2713LH-VO)



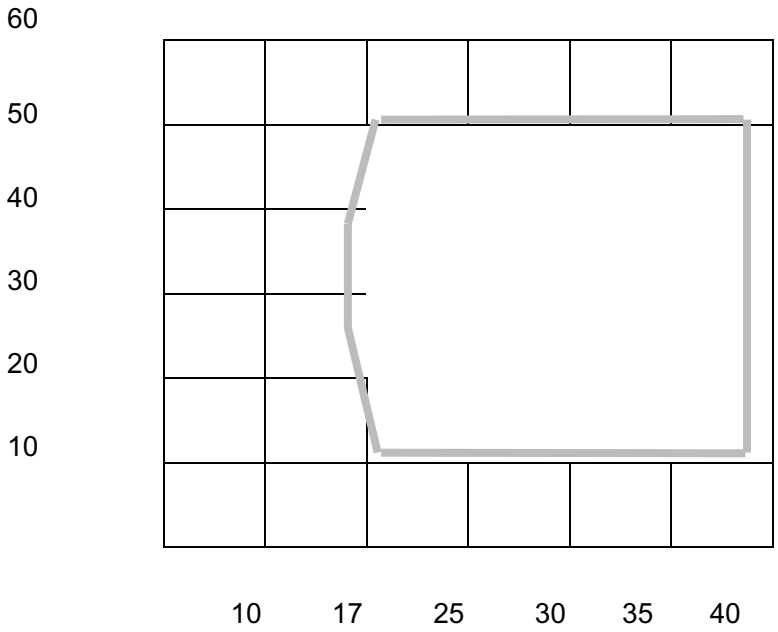
## 4. Refrigeration Cycle Diagram



## 5. Operation Limits

### 5.1 Cooling operation

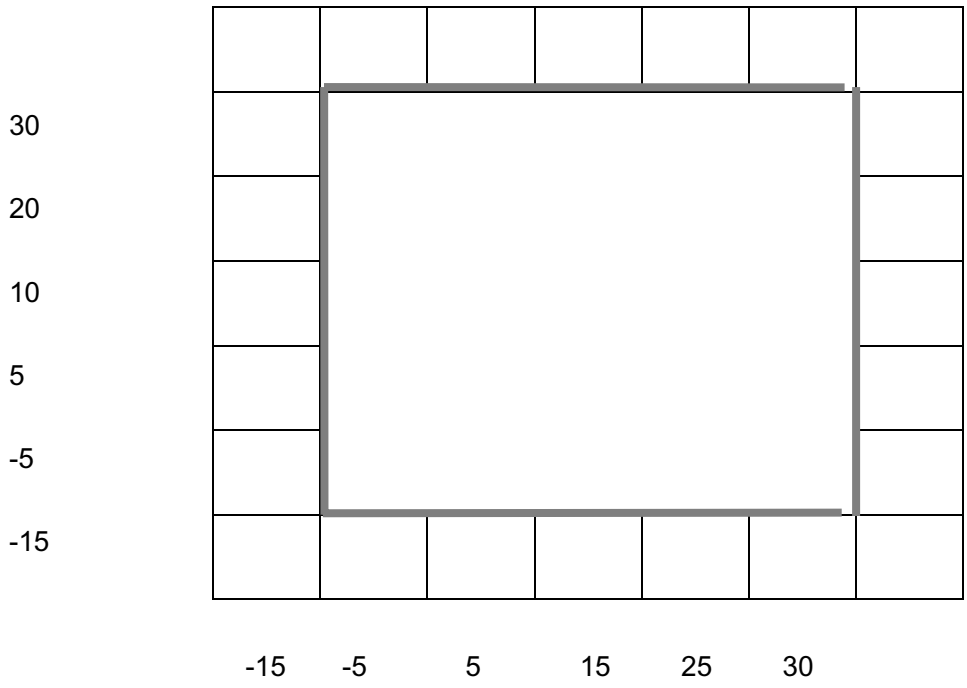
Outdoor unit air temp.




Note :the chart is the result from the continuous operation under constant air temperature conditions. however, excludes the initial pull-down stage.

### 5.2 Heating operation

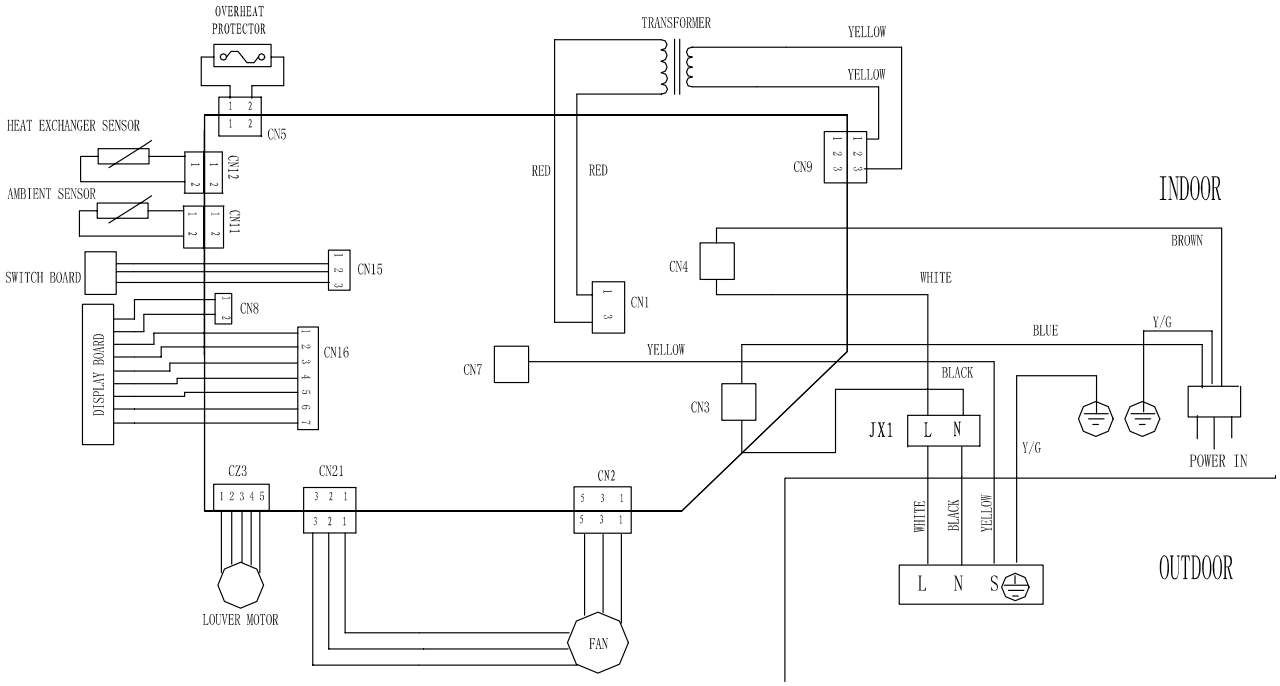
Indoor air temp.



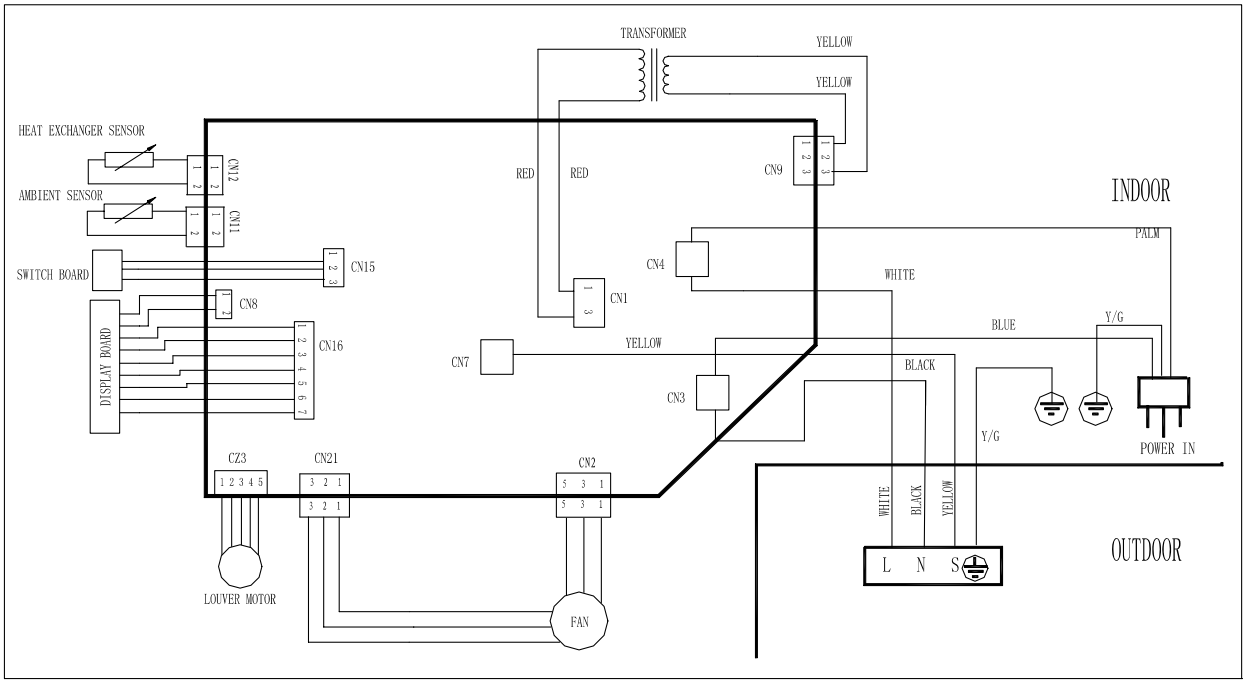

Note :the chart is the result from the continuous operation under constant air temperature conditions. however, excludes the initial pull-down stage.

## 6. Wiring Diagram

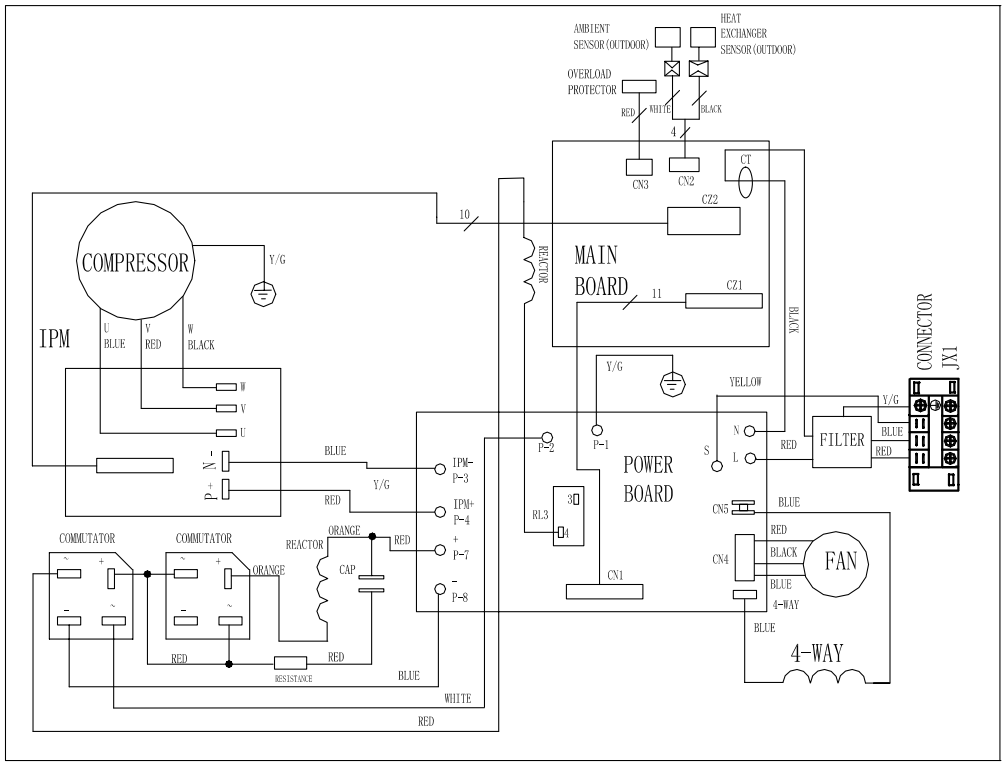
Indoor unit (DMB-G078LH-V, DMB-G098LH-V)



Indoor unit(DMB-G128LH-V)




Outdoor unit (DMB-F2713LH-VO)



7.Troubleshooting

7.1 Indoor Unit Error Display Function

LED4 operation LED2 defrosting LED1 timer LED4 auto

| LED2 defrost | LED1 Timer | LED3 Auto | LED4 operation | LED STATUS |
|---|---|---|---|---|
| X | X | O | ☆ | Mold protection |
| O | X | X | ☆ | Compressor top protection against temperature |
| X | O | X | ☆ | Open or short circuit of outdoor temperature sensor |
| X | O | O | ☆ | Over load or too low voltage protection |
| O | O | O | ☆ | Room temperature or evaporator temperature sensor open or short circuit of |
| O | O | ☆ | ☆ | Fan speed beyond control |
| ☆ | X | O | ☆ | Zero-crossing examination error |
| ☆ | O | X | ☆ | Temperature fuse protection |
| X | X | ☆ | ☆ | EEPROM data error |
| ☆ | O | X | ☆ | Types doesn't match |
| ☆ | ☆ | ☆ | ☆ | Indoor / outdoor units communication protection |

O (on) X (off) ☆ (flash)

7.2.Outdoor Unit Error Self-diagnosis Display

Outdoor Unit Error if L4 flashes at 1Hz.

Outdoor unit works: L4 on

Outdoor unit Stand by: if L4 flashes at 0.5Hz

8 .Electronic Function

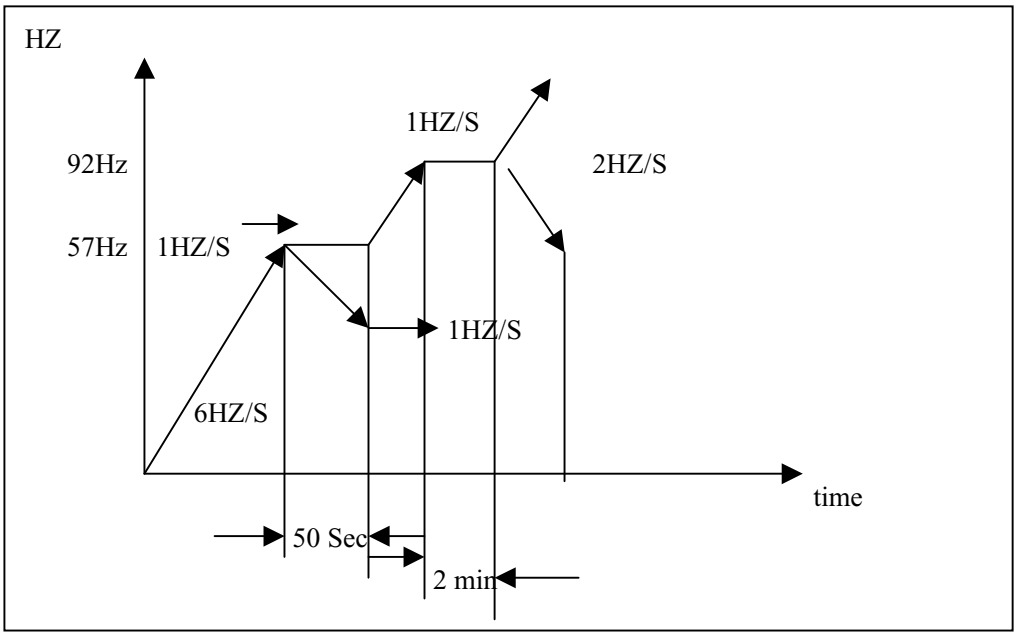
8.1 General Protection

8.1.1 Temperature Protection of Compressor Top

8.1.2 3 minutes Delayed Starting Protection of the Compressor

8.1.3 Voltage Protection

8.1.4 The frequency Up-Down speed at which the compressor starts, operates and shuts off will be subject to the following principles (outdoor chip):




8.1.5 Frequency Converter Mold Protection (outdoor chip):

The Frequency Converter Mold itself has a protection function against current, voltage and temperature, if there are 4 times of above mentioned protection functioning within 1 hour (when the compressor's consecutive operation lasts more than 10 minutes, the fore-mentioned 4 counts will be cleared), the whole machine will shut off and the mold protection gives an alarm.

8.2 Fan-only Mode Function Requirement

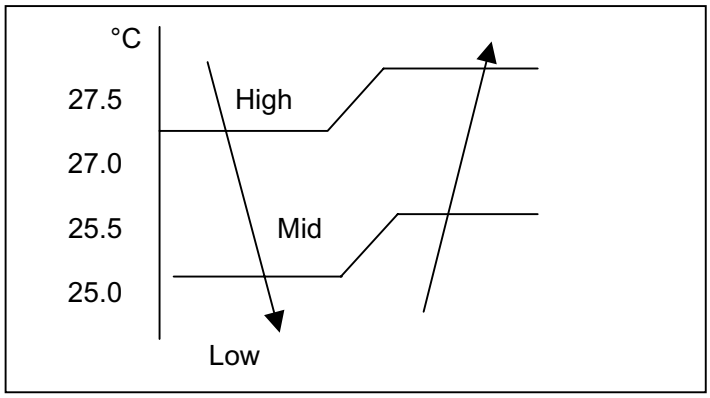
8.2.1 The compressor, 4 way valve and outdoor fan are off at Fan-only mode.

8.2.2 Temperature setting function is cancelled, the set temperature can not be displayed, nor adjusted.

8.2.3 The rotational speed of indoor fan can be optionally chosen by remote control as High/Mid/Low/Auto.

8.2.4 The indoor fan vanes at Fan-only mode perform the same as those at cooling mode.

8.2.5 Performance at Auto mode at Fan-only status is the same as that at Auto mode at cooling status, provided that the set temperature is 24°c.




8.3 Cooling Mode Function Requirement

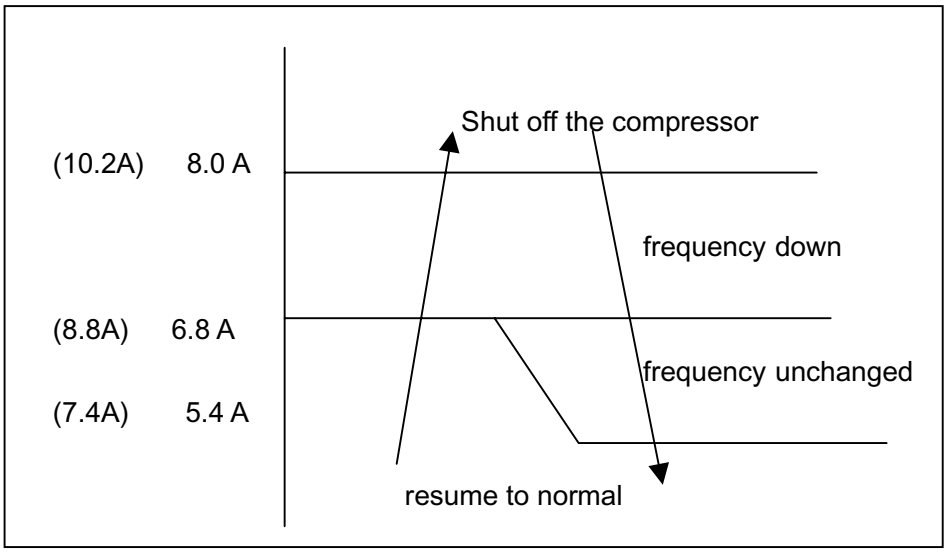
8.3.1 At cooling mode the 4 way valve is off.

8.3.2 Anti-icing Control for Indoor Evaporator

When the temperature of indoor heat exchanger drops to 4°c, the frequency will reduce one step down (including F0) and last for 1 minute every time until the temperature is kept between 4 - 7°c. If the temperature rises to 7°c, the limitation then will be removed.

When the temperature of indoor heat exchanger drops to < 0°c, shut off the compressor and it will resume when the temperature rises up to > 5°c.

8.3.3 Outdoor Unit Current Control When Cooling:

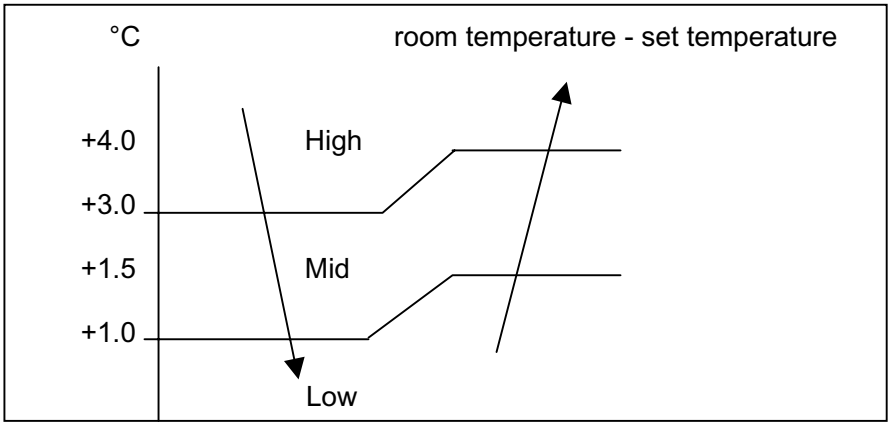



Note: The frequency down at the diagram is in accordance with the present frequency dropping down, to determine every 2 seconds whether the frequency is keeping going down or is recovering.

8.3.4 Indoor fan operates in accordance with the following principles:

8.3.4.1 When indoor fan is in operation, it can be remote controlled to High/Mid/Low/Auto modes.

8.3.4.2 The fan speed at Auto mode in cooling status is subject to the following:




8.3.5 Indoor fan vanes at cooling mode will swing in accordance with the following:

When just plugged in for cooling, the vanes will open to the standard angle 50°.

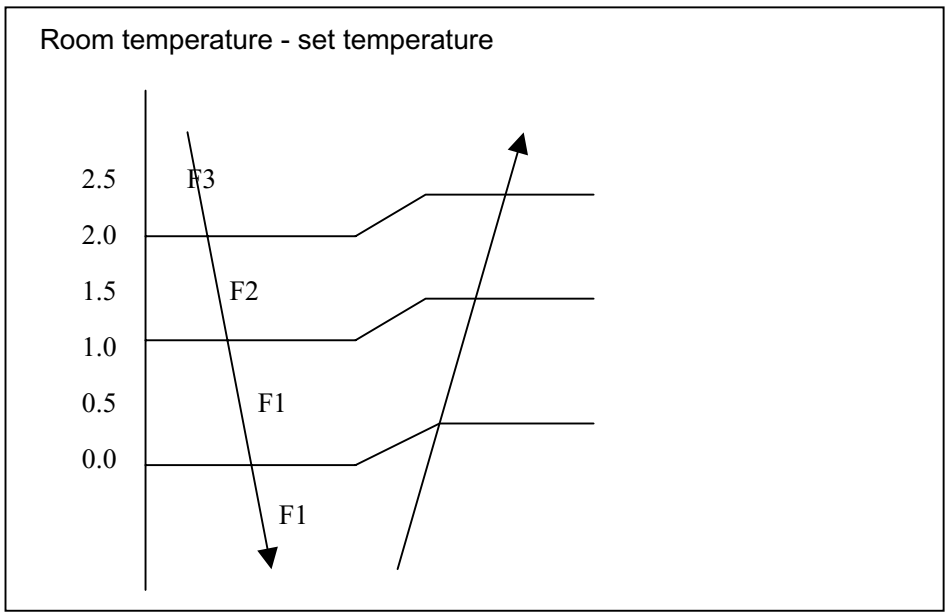
The vane angle can be set by remote control at any angle between 50° and 105° (every setting can adjust 6°) or set swinging (swinging angle will be 25°).

8.4 Dehumidifying Mode Requirements

8.4.1 At dehumidifying mode, the 4 way valve is shut off

8.4.2 At dehumidifying mode, the indoor fan is fixed in Breeze status and not adjustable.

8.4.3 At dehumidifying mode, the compressor operates in accordance with the following principles:




8.4.4 Too-low room temperature protection

During dehumidifying, when room temperature drops down < 10°c, the compressor will shut off, and when the room temperature rises up than 12°c, the compressor resumes operation.

8.4.5 At dehumidifying mode, the anti-icing function of indoor heat exchanger applies.

8.4.6 At dehumidifying mode, the power voltage and outdoor temperature limitation to the highest frequency when compressor starts and operates is the same as that at cooling mode.

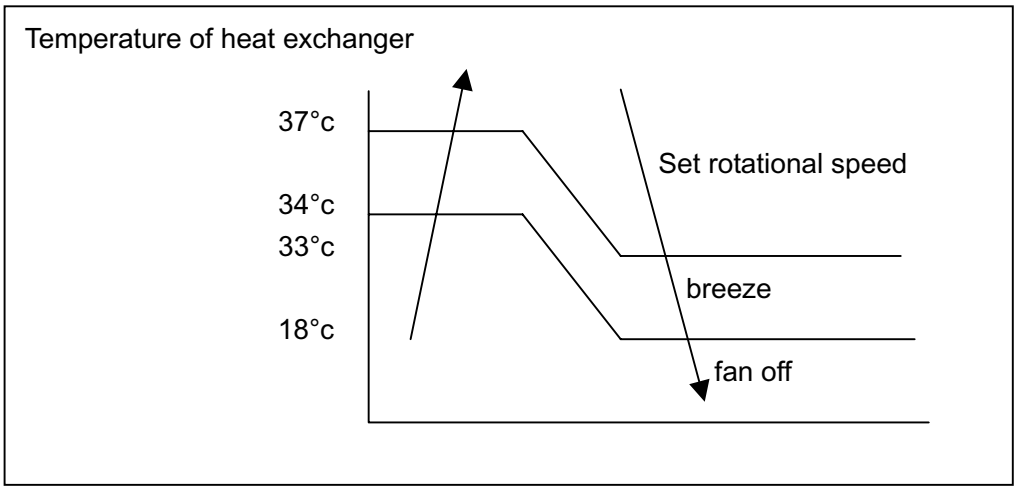
8.5 Heating Mode Function Requirement

8.5.1 At heating mode, the 4 way valve is on, during defrosting operation, it is off.

8.5.2 Outdoor fan usually turns on or off in accordance with the action of compressor, except for defrosting and ending of the defrost.

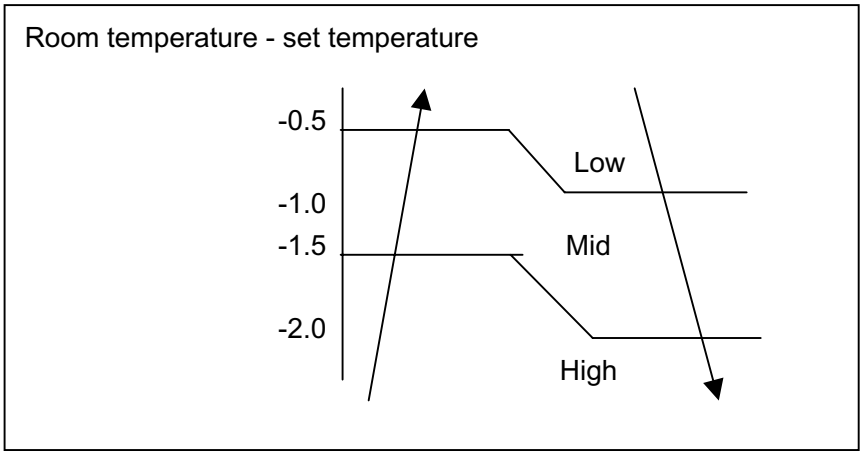
8.5.3 Indoor fan action:

Anti-cold air control

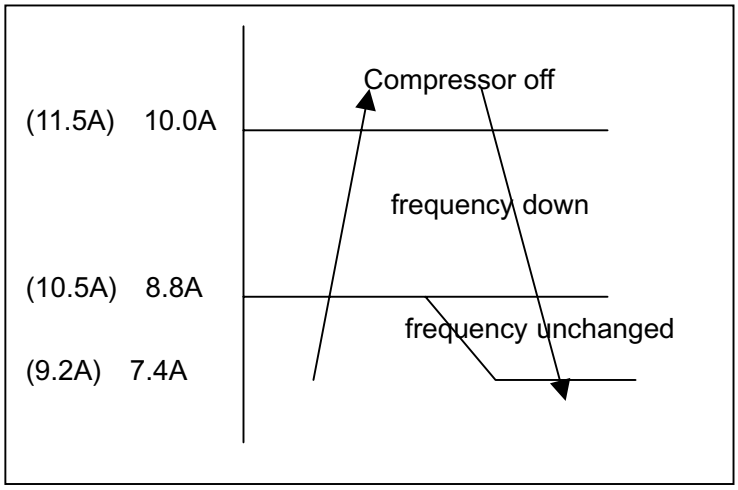



8.5.4 Indoor fan can be set by remote control to any mode like High/Mid/Low/Auto, however anti-cold air function comes first.

Auto fan



8.5.5 Outdoor Unit current control when heating




Note:
The frequency in the table goes down in accordance with the present frequency, determine every 2 seconds whether it keeps going down or it is recovering.

8.5.6 Indoor evaporator protection against high temperature

When the temperature of indoor heat exchanger is higher than 53 c, thefrequency will reduce one step and last for 20 seconds every time until the temperature drops down lower than 53°c. If the temperature drops down < 48°c, the limitation then will be removed (the frequency will not going down further when reaching 35Hz).

When the temperature of indoor heat exchanger is higher than 63°c, shut off the compressor.

8.5.7 Indoor fan vanes at heating mode will swing in accordance with the following:

When just plugged in for heating, the vanes will open to the standard angle 220°.

The vane angle can be set by remote control at any angle between 0° and 220° (every setting can adjust 6°) or set swinging (swinging angle will be 25°).

8.5.8 Defrosting operation

8.5.8.1 Defrosting precondition:

Defrosting starts when meeting one of the three conditions:

The temperature of outdoor heat exchanger remains consecutively lower than 3 cfor more than 40 minutes, and the temperature remains consecutively Ti1 for more than 3 minutes.

| Model | Ti1: |
|---|---|
| DSB-G098LH-V | -9°c |
| DSB-G128LH-V | -9°c |

② The temperature of outdoor heat exchanger remains consecutively lower than 3°c for more than 80 minutes, and the temperature remains consecutively Ti2 for more than 3 minutes.

| Model | Ti2: |
|---|---|
| DSB-G098LH-V | -7°c |
| DSB-G128LH-V | -7°c |

③ The temperature of outdoor heat exchanger remains consecutively lower than 3°c for more than 120 minutes, and the temperature remains consecutively Ti3 for more than 3 minutes.

| Model | Ti3: |
|---|---|
| DSB-G098LH-V | -5°c |
| DSB-G128LH-V | -5°c |

Note: The time period starts to count when outdoor heat exchanger temperature is lower than 3°c, the defrosting operation starts when the exchanger temperature remains lower than the starting temperatures which are Ti3, Ti2, Ti1.

8.5.8.2 Conditions of defrost ending

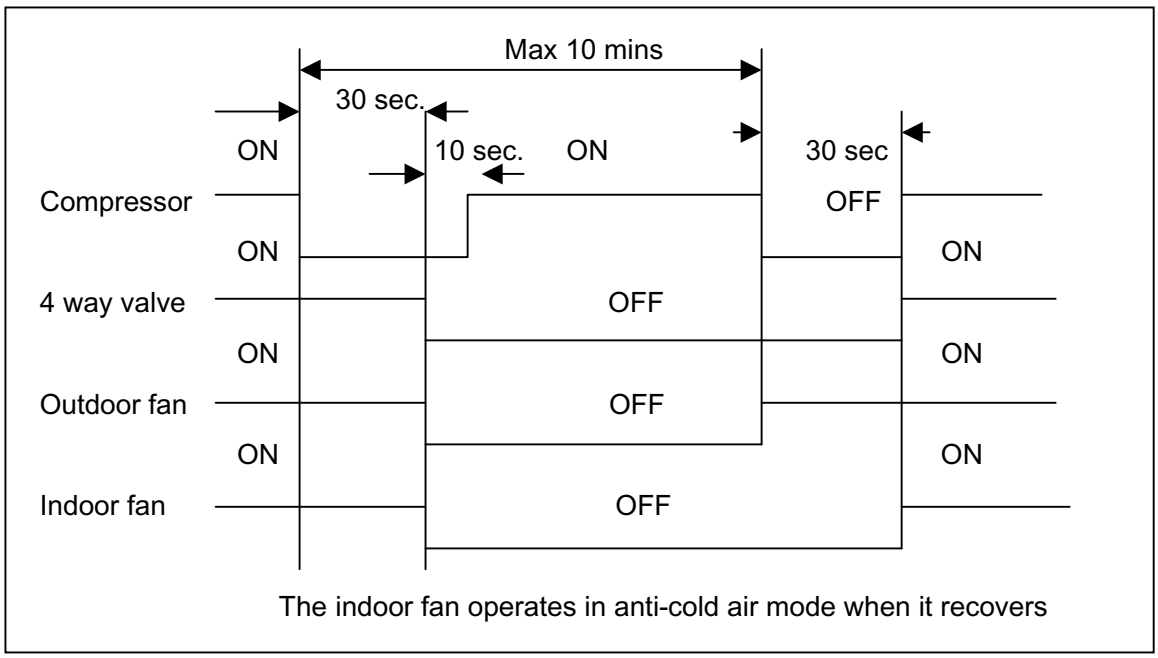
Defrosting ends when meeting any of the following three conditions and it turns to normal heating operation.

① When the temperature of outdoor heat exchanger rises up to 12°c.

② When the temperature of outdoor heat exchanger rises up to 8°c and this continues for more than 80 seconds.

③ When defrosting action continues for 10 minutes.

8.5.8.3 Defrosting Action




The indoor fan operates in anti-cold air mode when it recovers

8.5.9 Set Function Test

When it is detected that the outdoor temperature is between 5 - 9°c and room temperature is between 18 - 22°c, provided that the heating operation remains consecutively more than 30 minutes, the compressor's highest operational frequency is FMAX=F8=96HZ. If any of the above conditions is not met, it will quit from set frequency operation.

8.6 Auto Mode Function

Using remote control to choose auto mode, under which the set temperature can be adjusted in a range of 17 - 30°c.

8.6.1 When entering auto mode, the A/C will choose cooling, heating or fan only according to the difference between room temperature (TA) and set temperature (TS).

| TA - TS | Operation status |
|---|---|
| TA -TS > 1°c | Cooling |
| -1°c TA - TS +1°c F | an only |
| TA - TS < -1°c | Heating |

8.6.2 At auto mode, the indoor fan will choose auto fan in corresponding mode.

8.6.3 At auto mode, the vane action of indoor fan is the same as that of chosen mode.

8.6.4 Once a mode is chose, it will take 5 minutes after shutting off the compressor to re-choose another mode according to the difference between room temperature and set temperature, or you can re-choose mode when set temperature is changed.

8.7 Forced Operation Function

8.7.1 Forced operation is controlled by the switch on switch board and divided into forced cooling and forced auto. Remote control doesn't work at forced operation control.

8.7.2 At forced operation status, all protection functions in general protection fore-mentioned apply.

8.7.3 At forced cooling mode, the compressor operates at a fixed frequency of F2=42HZ, indoor fan is Breeze, anti-icing control and general current control of cooling outdoor unit work; forced operation will transfer to auto mode whose set temperature is 24°c automatically after 30 minutes.

8.7.4 At forced auto mode, the remote control controls in a set temperature of 24°c.

8.8 Timer Function Requirement

8.8.1 The maximum length of timer is 24 hours and the minimum resolving power is 15 minutes.

8.8.2 Timer on function: first turn off the A/C, the A/C will be automatically on at the set time.

8.8.3 Timer off function: first turn on the A/C, the A/C will be automatically off at the set time.

8.8.4 Timer on/off function( on time is earlier than off time): first turn off the A/C, it will be automatically on at set time, and later be off at the set time.

8.8.5 Timer off/on function( off time is earlier than on time): first turn on the A/C, it will be automatically off at set time, and later be on at the set time.

8.8.6 Timer function execution is applicable upon one operation only.

8.8.7 Timer error is less than 1 min/h.

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